

Two new species of the genus *Mecyclothorax* Sharp from Papua New Guinea (Insecta, Coleoptera, Carabidae, Psydrinae)

Martin BAEHR

Zoologische Staatssammlung, Münchhausenstr. 21, D-81247 München, Germany.

E-mail: martin.baehr@zsm.mwn.de

Two new species of the genus *Mecyclothorax* Sharp from Papua New Guinea (Insecta, Coleoptera, Carabidae, Zuphiinae). - Two additional new species of the psydrine genus *Mecyclothorax* Sharp are described from Papua New Guinea: *M. cuccodoroi* and *M. loebli*. They occur sympatrically at median altitude and are distinguished from all other New Guinean species by external structure and shape, and by the structure of their aedeagi. A revised key to all New Guinean species of *Mecyclothorax* is presented.

Key-words: Coleoptera – Carabidae – Psydrinae – *Mecyclothorax* – new species – Papua New Guinea.

INTRODUCTION

The psydrine genus *Mecyclothorax* in New Guinea was repeatedly subject of descriptions of new species and of revisions (Darlington, 1962, 1971; Baehr, 1992, 1995, 1998) which are evidence that the mecyclothoracine fauna of New Guinea by no means is adequately recorded. On the contrary, even the increasing collecting work during the last 20 years only could give a very imperfect picture of the number of species occurring and of their distribution.

Until now, altogether 10 species were described from the whole island of New Guinea, but even their recorded distribution (see appendix) demonstrates our limited knowledge. Thus far, the genus was recorded almost exclusively from few scattered localities within a limited area in central and eastern Irian Jaya. In spite of much longer and better exploration, from the eastern half of the island (Papua New Guinea) to date only a single species was described that occurs on the highest top of Mt. Wilhelm. It was difficult to understand, then, why Papua New Guinea should not harbour additional species at lower altitudes. This defiance, and likewise the scattered records in western New Guinea, most probably reflect the yet absolutely inadequate sampling of these small beetles that probably are best collected by sieving or Berlese extraction of litter or soil. Therefore, it is not too surprising, that both new species described in the present paper were collected by staff of the Geneva Museum who are well known for their very successful sampling of litter and soil inhabiting tiny insects.

As a conclusion, in New Guinea the genus *Mecyclothorax* to date is yet unknown from Owen Stanley Range, Huon Peninsula, the western part of Papua New Guinea, and also from the whole western part of Irian Jaya including Snow Mountains

and Vogelkop Peninsula. Most probably species will be discovered in most of these areas in future, because this originally Australian genus is as well distributed to the east of New Guinea, e.g. in New Caledonia (Jeannel, 1944; Deuve, 1987; unpublished records), Tahiti (Perrault, 1978, 1992), and Hawaii (Britton, 1948), as to the west, e.g. in Borneo (Baehr & Lorenz, 1999) and Java (Louwerens, 1949).

MATERIAL AND METHODS

Both new species were obtained within a sample of carabid beetles that were collected by G. Cuccodoro of the Muséum d'histoire naturelle, Genève (MHNG) in 1992 and kindly were loaned for examination from the collector. The holotypes are located in that museum, paratypes are shared with the working collection of the author at Zoologische Staatssammlung, München (CBM).

For dissection of the male genitalia specimens were soaked in a wet jar for a night, then the genitalia were cleaned for a short while in hot 4% KOH. For the descriptions normal taxonomic methods have been used.

Measurements were taken using a stereo microscope with an ocular micrometer. Length has been measured from apex of labrum to apex of elytra. Length of pronotum was measured along midline, width of pronotum at widest part, width of base of pronotum at the extreme tips of the basal angles. Measurements and ratios were obtained in the same manner as in Baehr (1992, 1995, 1998).

Mecyclothorax cuccodoroi sp. n.

Figs 1, 3

Holotype: ♂, PAPUA NG: Morobe Bulldog Rd. Hidden Valley Gold 2550m, 16.V.1992 G. Cuccodoro #238 (MHNG).

Paratypes: 2 ♂♂, 1 ♀, same data (CBM, MHNG)

Etymology: The name is a patronym in honour of the collector.

Distribution: Central eastern Papua New Guinea. Known only from type locality.

Collecting circumstances: Probably collected by sieving ground litter in rain forest at median altitude.

DIAGNOSIS

Small, piceous-castaneous species, characterized by absence of the posterior lateral pronotal seta, distinct basal angle and coarsely punctate basal part of pronotum, short, not oviform elytra with markedly punctate striae, and glossy, though not iridescent surface. According to shape of aedeagus the species probably is most closely related to *M. sapae* Baehr, but is distinguished from this species by much lesser size, different shape of pronotum, and absolute lack of microreticulation on dorsal surface.

DESCRIPTION

Measurements: Length: 3.5-3.8 mm; width: 1.5-1.7 mm. Ratios. Width head/prothorax: 0.64-0.68; width/length of prothorax: 1.21-1.27; width base/apex of prothorax: 1.04-1.07; width elytra/prothorax: 1.33-1.35; length/width of elytra: 1.30-1.32.

Colour: Head and prothorax piceous, elytra lighter, castaneous. Mouthparts, antennae, and legs light reddish. Lower surface reddish-piceous, elytral epipleurae light reddish.

Head: Rather narrow in relation to prothorax. Eyes comparatively large, convex, rather protruding, orbits small, oblique, c. 1/4 of length of eye. Frontal furrows

deep, oblique, elongate, completely encircling the eye. Frons with more or less distinct, about circular, paramedian grooves. Posterior supraorbital seta situated slightly behind posterior margin of eye. Clypeal suture well impressed. Labrum transverse, truncate, 6-setose. Mandibles moderately elongate, apically suddenly curved. Mentum with distinct, apically rounded tooth. Submentum with very elongate setae. Antenna rather short, slightly surpassing posterior border of pronotum, median antennomeres slightly $>1.5 \times$ as long as wide. Surface impunctate, without microreticulation, glossy.

Pronotum: Large, wide, circular, considerably wider than long, disk fairly convex, laterally evenly curved, with a short but conspicuous excision in front of the basal angles. Widest diameter about at middle. Base slightly wider than apex. Apex straight, apical angles slightly projecting, rounded off. Base almost straight, only laterally faintly oblique. Basal angles distinct, almost right, though at apex very obtuse. Marginal channel rather narrow, little widened near basal angles, base and apex not margined. Anterior transverse sulcus absent, posterior transverse sulcus barely perceptible. Median line feebly impressed, anteriorly and posteriorly abbreviated. Basal grooves about circular, rather indistinct. Basal area not explanate, on same level with disk, very coarsely punctate. Anterior marginal seta situated slightly in front of middle, slightly removed from lateral margin, posterior marginal seta absent. Surface impunctate, without any microreticulation, highly glossy.

Elytra: Short and wide, dorsally markedly convex, widest diameter about at middle. Humeri obtusely rounded, lateral margin evenly curved. Basal margin distinct, oblique, slightly sinuate, connected to scutellary striole. Striae except for sutural stria abbreviated at humerus, all striae except for inner two also abbreviated at apex. All striae except for 7th well impressed, very coarsely punctate. Inner six intervals distinctly convex. 7th stria impressed only near base, punctate. Scutellary striole fairly elongate, situated mediad of the outturned sutural stria. Marginal channel narrow. 3rd interval with 2 setiferous punctures in centre of interval, anterior puncture situated in basal fourth, posterior puncture in middle. Punctures rather inconspicuous, setae extremely short. Near apex with a single setiferous puncture at end of 3rd stria. Marginal pores conspicuous, about 13 in a row that is slightly interrupted in middle, marginal setae very elongate. Intervals impunctate, without any traces of microreticulation. Surface highly glossy, though not iridescent. Inner wings absent.

Lower surface: Largely impunctate, though mesepisternum with a row of very coarse punctures. Metepisternum about as long as wide. Sternum VII in ♂ bisetose, in ♀ quadrisetose.

Legs: Without striking features. Three basal tarsomeres of male anterior tarsus expanded and biseriately squamose.

Male genitalia: Genital ring short and wide, highly asymmetric, with conspicuously incurved lateral flanges. Aedeagus moderately elongate, suddenly curved down towards apex, lower surface with a heavily sclerotized ridge which in middle forms a conspicuous convexity. Apex markedly compressed, foliaceous, conspicuously spatulate, with convex tip, strongly sclerotized, slightly curved to left side and slightly concave on left side. Orifice almost completely situated on right side. Internal sac with two complexly shaped sclerites and with some folding. Both parameres of fairly similar size and shape, though right paramere more hollowed and with longer and

narrower apex. Apex with 2-3 rather elongate setae, lower margin in middle with c. 6-8 setae. Left paramere with shorter and wider apex that bears two fairly elongate setae. Lower margin apparently asetose.

Female genitalia: Stylomere 1 compact, at apical rim with 2 setae. Stylomere 2 rather short, dentiform, with two elongate ventrolateral ensiform setae, one elongate dorsomedian ensiform seta situated about in middle of stylomere, and two short apical nematiform setae originating from a groove.

Variation: Apart from some variation in colour that may be due to incomplete pigmentation, some minor variation in relative shape of pronotum and elytra was noted. One specimen, however, has some elongate, very deep longitudinal sulci on head, much alike the trechine sulci, though in this specimen asymmetrically arranged. Certainly, this is an accidental deformation.

Mecyclothorax loebli sp. n.

Figs 2, 4

Holotype: ♂. PAPUA NG: Morobe Bulldog Rd. Mt. Nako 2600m, 29.VI.1992 G. Cuccodoro #250 (MHNG).

Paratypes: 4 ♀♀, PAPUA NG: Morobe Bulldog Rd. Hidden Valley Gold 2550m, 16.V.1992 G. Cuccodoro #238 (CBM, MHNG).

Etymology: The name is a patronym in honour of the former Curator of Coleoptera of the Geneva Museum, Dr I. Löbl, who kindly loaned the material.

Distribution: Central eastern Papua New Guinea. Known only from vicinity of Bulldog Rd. in Morobe Province.

Collecting circumstances: Probably collected by sieving ground litter in rain forest at median altitude.

DIAGNOSIS

Small, uniformly black species, characterized by absence of the posterior lateral pronotal seta, obtuse basal angle and scarcely though coarsely punctate basal part of pronotum, short, convex, not oviform elytra with markedly punctate striae, and rather glossy, though not iridescent surface. With respect to shape and structure of the aedeagus, this species is most closely related to *M. riedeli* Baehr, but is distinguished from the latter species by its shorter, more quadrate elytra and the more regularly curved aedeagus that bears a more distinctly upturned apex.

DESCRIPTION

Measurements: Length: 3.8-4.2 mm; width: 1.85-1.90 mm. Ratios. Width head/prothorax: 0.63-0.65; width/length of prothorax: 1.19-1.25; width base/apex of prothorax: 0.87-0.92; width elytra/prothorax: 1.46-1.50; length/width of elytra: 1.26-1.30.

Colour: Black, labrum, mandibles, and legs dark reddish, palpi and antennae light reddish. Lower surface dark piceous, elytral epipleurae reddish.

Head: Rather narrow in relation to prothorax. Eyes comparatively large, convex, rather protruding, orbits rather small, oblique, slightly $> 1/4$ of length of eye. Frontal furrows deep, oblique, elongate, completely encircling the eye. Frons with a more or less distinct, about circular median groove. Posterior supraorbital seta situated slightly behind posterior margin of eye. Clypeal suture well impressed. Labrum transverse, truncate, 6-setose. Mandibles moderately elongate, apically suddenly curved. Mentum with distinct, apically rounded tooth. Submentum with very elongate setae.

TABLE 1. Measurements and ratios of the *Mecyclothorax* species of New Guinea.

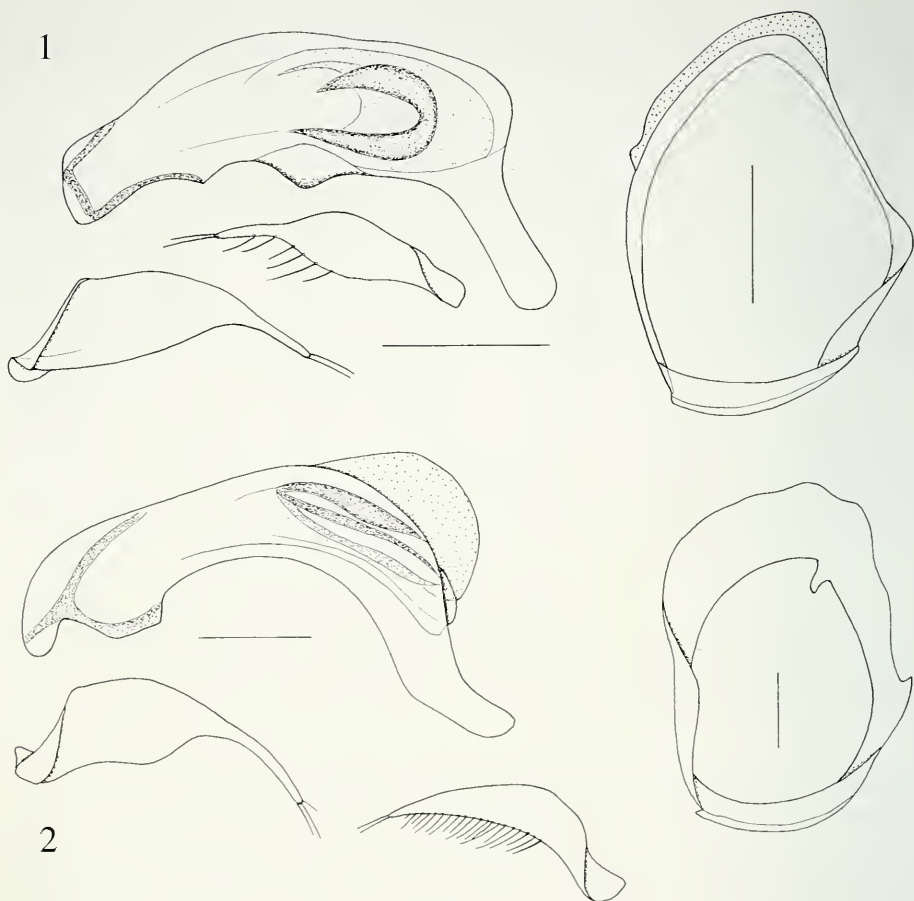
For better comparison of the species the measurements and ratios are compiled in the following table. For both Darlington's species some ratios were taken from the descriptions, though these species are rather easily identified.

	Body length (mm)	ratio width head/pronotum	ratio width/length of pronotum	ratio width base/apex pronotum	ratio width elytra/pronotum	ratio length/width elytra
<i>toxopei</i> Darlington	4.7	0.76	1.29	0.98	1.50	1.41
<i>sedlaceki</i> Darlington	4.3	0.77	1.36	0.98	1.46	1.37
<i>julianae</i> Baehr	4.6	0.69	1.25	1.11	1.42	1.47
<i>eipomeki</i> Baehr	5.5	0.69	1.18	1.06	1.38	1.49
<i>elitti</i> Baehr	5.8-6.3	0.65-0.69	1.15-1.19	1.09-1.12	1.38-1.40	1.42-1.45
<i>sapei</i> Baehr	5.25	0.75	1.13	0.96	1.50	1.39
<i>cuccodoroi</i> sp. n.	3.5-3.8	0.64-0.68	1.21-1.27	1.04-1.07	1.33-1.35	1.30-1.32
<i>jiwikae</i> Baehr	3.5-3.75	0.64-0.66	1.18-1.20	0.95-0.98	1.42-1.43	1.37
<i>langdae</i> Baehr	4.6	0.65	1.17	1.05	1.38	1.52
<i>bilaianus</i> Baehr	4.0	0.65	1.17	1.01	1.45	1.42
<i>riedeli</i> Baehr	4.0-4.4	0.59	1.18-1.21	1.18-1.19	1.35-1.38	1.42-1.44
<i>loebli</i> sp. n.	3.8-4.2	0.63-0.65	1.19-1.25	0.87-0.92	1.46-1.50	1.26-1.30

Antenna rather short, barely surpassing the posterior border of pronotum, median antennomeres c.1.5 x as long as wide. Surface impunctate, rather glossy, with traces of slightly transverse microreticulation which is more distinct on neck, and also in the three females than in the single male.

Pronotum: Large, wide, circular, considerably wider than long, disk moderately convex, laterally evenly and strongly curved, without or with a very slight excision in front of the basal angles. Widest diameter slightly in front of middle. Base considerably narrower than apex. Apex straight, apical angles barely projecting, rounded. Base almost straight or very gently convex, laterally faintly oblique. Basal angles obtuse, very wide. Marginal channel narrow throughout, not widened near basal angles, apex and base not margined, though lateral margin slightly incurved at base. Anterior transverse sulcus barely indicated, posterior transverse sulcus shallow. Median line distinct, though rather faintly impressed, anteriorly and posteriorly shortly abbreviated. Basal grooves about linear, slightly oblique, fairly distinct. Basal area not explanate, on same level with disk, sparsely though coarsely punctate. Anterior marginal seta situated slightly in front of middle, slightly removed from lateral margin, posterior marginal seta absent. Surface impunctate, glossy, with very superficial, transverse, somewhat irregular microreticulation that is more distinct in apical and basal parts and in the females.

Elytra: Very short and wide, dorsally markedly convex, widest diameter about at middle. Humeri obtusely rounded, lateral margin in middle barely convex, almost straight, hence, shape of elytra somewhat rectangular. Basal margin distinct, sinuate, connected to scutellary striole. Striae except for sutural stria much abbreviated at humerus, all striae except for inner two also abbreviated at apex. Inner five striae well impressed, very coarsely punctate. Inner five intervals distinctly convex. 6th stria stria impressed only near base, 7th stria not impressed, both punctate. Scutellary striole fairly



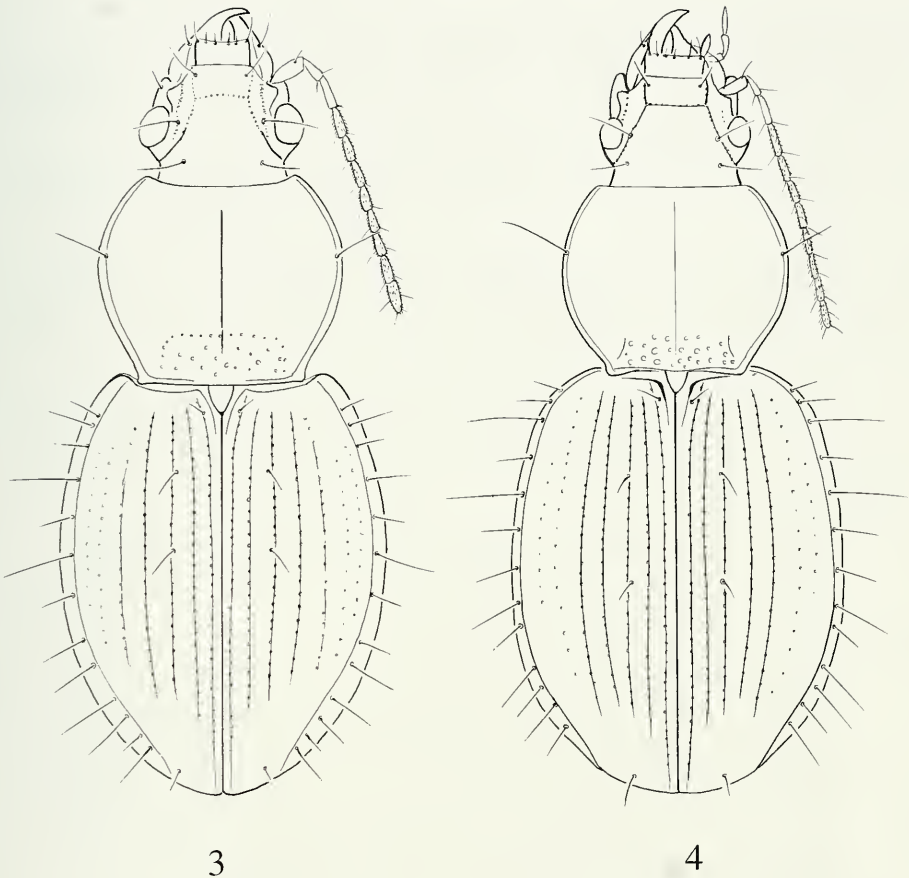
FIGS 1, 2

Male genitalia. Aedeagus, parameres, and genital ring. 1. *Mecyclothorax cuccodoroi* sp. n. 2. *M. loebli* sp. n. Scales: 0.25 mm.

elongate, situated mediad of the outturned sutural stria. Marginal channel moderately wide. 3rd interval with 2 setiferous punctures in centre of interval, anterior puncture situated in basal fourth, posterior puncture in middle, though two specimens with a single puncture unilaterally. Punctures rather inconspicuous, setae extremely short. Near apex with a single setiferous puncture near end of 3rd stria. Marginal pores fairly conspicuous, about 13 in a row that is slightly interrupted in middle, marginal setae very elongate. Intervals impunctate, with very fine, highly superficial, transverse microreticulation. Surface glossy, though not iridescent. Inner wings absent.

Lower surface: Largely impunctate, though mesothorax sparsely though very coarsely punctate. Metepisternum about as long as wide. Sternum VII in ♂ bisetose, in ♀ quadrisetose.

Legs: Without striking features. Three basal tarsomeres of male anterior tarsus expanded and biserially squamose.



FIGS 3, 4

Habitus. 3. *Mecyclothorax cuccodoroi* sp. n. 4. *M. loebli* sp. n. Lengths: 3.5 mm; 4.2 mm.

Male genitalia: Genital ring short and wide, highly asymmetric, with conspicuously wide lateral flanges, very thickly sclerotized. Aedeagus moderately elongate, remarkably curved, with deeply concave lower surface. Apex wide, compressed, moderately foliaceous, somewhat spatulate, with convex tip, strongly sclerotized, curved down though near tip withdrawn and slightly curved to the right side. Orifice largely situated on right side. Internal sac with an about circular sclerite and with some folding. Both parameres of fairly similar size and shape, though right paramere narrower and with shorter, wider, more tapering apex. Apex with 2 moderately elongate setae, lower margin densely fringed with numerous (> 20) rather elongate setae. Left paramere slightly larger, with longer and narrower apex, that bears two fairly elongate setae and a shorter one. Lower margin asetose.

Female genitalia: Stylomere 1 compact, at apical rim with 2-3 setae. Stylomere 2 rather short, dentiform, with two elongate ventrolateral ensiform setae, one elongate

dorsomedian ensiform seta situated about in middle of stylomere, and two short apical nematiform setae originating from a groove.

Variation: Some sexual variation apparently present, because the single male possesses a slightly narrower abdomen, and the microreticulation of the dorsal surface is less distinct than in the three examined females.

REVISED KEY TO THE SPECIES OF *MECYCLOTHORAX* SHARP FROM NEW GUINEA

Because both new species do not fit the present full or partial keys to the New Guinean species of *Mecyclothorax* (Baehr, 1995, p. 4; 1998, p. 23), a completely new key is presented that should replace both former keys. For easier determination, however, figures from the former papers (Baehr, 1992, 1995, 1998) are quoted where necessary.

Although range is not a *prima facie* distinguishing character, the ranges of most species seem to be so restricted that they can be used as support for the differentiation of the species. Therefore, geographic and altitudinal ranges are included in the key as exactly as possible.

- 1 Elytral striae 3 and 5 with setiferous punctures. Wilhelmina Top (Gn. Trikora), central Irian Jaya, at 4200 m *toxopei* Darlington
- Only elytral stria 3 with setiferous punctures 2
- 2 Posterior lateral seta of pronotum present 3
- Posterior lateral seta of pronotum absent 5
- 3 Elytra with 4 discal setae; elytral striae well impressed, crenulate, intervals convex, stria 7 fairly well developed. Juliana Top (Gn. Mandala), eastern central Irian Jaya, at 3500 m *julianae* Baehr
- Elytra with 2, rarely unilaterally 3 discal setae; elytral striae weakly impressed, outer striae consisting of rows of punctures only, intervals depressed, stria 7 scarcely indicated. Distribution different 4
- 4 Smaller, shorter species, length c. 4.3 mm; colour black; pronotum wider, ratio w/l c. 1.36, lateral margin very shortly sinuate in front of the subdentiform basal angles; surface of elytra irregularly microreticulate. Mt. Wilhelm, central Papua New Guinea, at 4250 m *sedlaceki* Darlington
- Larger, longer species, length c. 5.5 mm; colour reddish-piceous; pronotum narrower, ratio w/l <1.20, lateral margin barely sinuate in front of the obtusely subdentiform basal angles; surface of elytra regularly microreticulate. Eipomek-Langda area, eastern central Irian Jaya, at 3500 m *eipomeki* Baehr
- 5 Basal angles of pronotum almost rectangular, lateral margin near base distinctly sinuate; aedeagus see Baehr (1995, figs 5, 7) and fig. 1 6
- Basal angles of pronotum obtuse, lateral margin near base not or barely sinuate; aedeagus see Baehr (1992, fig. 2; 1995, figs 11, 12; 1998, fig. 2) and fig. 2 8
- 6 Larger species, length > 5 mm; surface at least with traces of microreticulation; aedeagus see Baehr (1995, figs 5, 7). Eastern central Irian Jaya, above 3200m 7

- Smaller species, length < 4 mm; surface without traces of microreticulation; aedeagus see fig. 1. Bulldog Rd., Morobe Prov., eastern central Papua New Guinea, at 2550m *cuccodoroi* sp. n.
- 7 Larger species, length > 5.7 mm; microreticulation on head and pronotum barely indicated, on elytra rather superficial, but present on apical part of elytra; basal angles of pronotum obtuse at apex, lateral margins distinct, explanate and slightly upturned; at least median elytral striae deeply impressed, intervals distinctly convex; aedeagus see Baehr (1995, fig. 5). Gunung Elit, eastern central Irian Jaya, at 3200-3300 m *eliti* Baehr
- Smaller species, length c. 5.3 mm; microreticulation distinct, on elytra even very conspicuous, but absent on apical part of elytra; basal angles of pronotum rectangular, lateral margins very narrow, barely explanate and upturned; elytral striae barely impressed, intervals depressed; aedeagus see Baehr (1995, fig. 7). Sape Valley, north of Juliana Top (Gn. Mandala), eastern central Irian Jaya, at 3400 m *sapei* Baehr
- 8 Aedeagus with short, wide, laminate apical plate that is bent down (Baehr, 1995, figs 10, 11); basal angles of pronotum very obtuse, without any perceptible sinuosity (Baehr, 1995, figs 13, 14); either very small species (length < 3.7 mm) with short elytra, or larger species (length 4.6 mm) with elongate elytra 9
- Aedeagus either with short, laminate apex that is markedly falciform (Baehr, 1998, fig. 2) or with elongate, less wide apex that is slightly curved upwards at tip (Fig. 2; Baehr, 1992, fig. 2); basal angles of pronotum obtuse, though commonly with perceptible sinuosity (Fig. 4; Baehr, 1992, fig. 1; 1998, fig. 1), medium sized species (length 3.8-4.4 mm) 10
- 9 Smaller and shorter species, length < 3.8 mm, ratio l/w of elytra < 1.37; basal angles of pronotum almost rounded off; anterior transverse sulcus of pronotum weak; aedeagus elongate, markedly curved (Baehr, 1995, fig. 10). Jiwika area, central Irian Jaya, at 2300 m *jiwikae* Baehr
- Larger and more elongate species, length > 4.5 mm, ratio l/w of elytra > 1.50; basal angles of pronotum distinct, though obtuse; aedeagus stouter, less curved (Baehr, 1995, fig. 11). Langda area, eastern central Irian Jaya, at 2300 m *langdae* Baehr
- 10 Apex of aedeagus short, laminate, markedly falciform (Baehr, 1998, fig. 2). Bilai area, central Irian Jaya, at 1900-2300 m *bilaianus* Baehr
- Apex of aedeagus elongate, not falciform, only feebly curved up (Fig. 2; Baehr, 1992, fig. 2) 11
- 11 Elytra longer and narrower (ratio length/width > 1.42), more oviform (Baehr, 1992, fig. 1); base of pronotum distinctly wider than apex (ratio base/apex > 1.18); lower surface of aedeagus in middle straight, apex less upturned (Baehr, 1992, fig. 2). Kangine area, Baliem Valley, central Irian Jaya, at 1900 m *riedeli* Baehr
- Elytra shorter and wider (ratio length/width < 1.30), more quadrate (Fig. 4); base of pronotum distinctly narrower than apex (ratio base/apex

< 0.92); lower surface of aedeagus in middle evenly concave, apex more distinctly upturned (Fig. 2). Bulldog Rd. area, Morobe Prov., eastern central Papua New Guinea, at 2550-2600 m *loebli* sp. n.

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APPENDIX. Checklist of the *Mecyclothorax* species of New Guinea

Abbreviations: c. = central, e. = eastern, ce. = central eastern.

- | | |
|-----------------------------------|--|
| <i>bilaianus</i> Baehr, 1998 | c. IRIAN JAYA: Bilai – 1900-2300 m |
| <i>cuccodoroi</i> sp. n. | ce. PAPUA NEW GUINEA: Bulldog Range – 2550 m |
| <i>eipomeki</i> Baehr, 1995 | e. IRIAN JAYA: Eipomek – 3500 m |
| <i>eliti</i> Baehr, 1995 | c. IRIAN JAYA: Gn. Elit – 3200-3300 m |
| <i>jiwika</i> Baehr, 1995 | c. IRIAN JAYA: Jiwika – 2300 m |
| <i>julianae</i> Baehr, 1995 | e. IRIAN JAYA: Juliana Top (Gn. Mandala) – 3500 m |
| <i>langdae</i> Baehr, 1995 | c. IRIAN JAYA: Langda – 2300 m |
| <i>loebli</i> sp. n. | ce. PAPUA NEW GUINEA: Bulldog Range – 2550-2600 m |
| <i>riedeli</i> Baehr, 1992 | c. IRIAN JAYA: Baliem Vy. – 1900 m |
| <i>sapei</i> Baehr, 1995 | e. IRIAN JAYA: Juliana Top (Gn. Mandala) – 3400 m |
| <i>sedlaceki</i> Darlington, 1971 | c. PAPUA NEW GUINEA: Mt. Wilhelm – 4250 m |
| <i>toxopei</i> Darlington, 1962 | c. IRIAN JAYA: Wilhelmina Top (Gn. Trikora) – 4200 m |